Collection, Recycling,
and Recovery
of paper and board

17th Report

JULY 2012

2011

comieco
Consorzio Nazionale Recupero e Riciclo
degli Imballaggi a base Cellulosica

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and Recovery
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50.6 KG

IS THE AVERAGE AMOUNT THAT EACH ITALYN CITIZEN COLLECTED SEPARATELY IN 2011

RECYCLING RATE OF PAPER AND BOARD PACKAGING COLLECTED IN 2011:

79.6 %

THE AMOUNT OF PAPER AND BOARD RECYCLED FROM 1999 TO 2011 EQUALS THE VOLUME OF

248 LANDFILLS

THAT WERE NOT BUILT ACROSS ITALY THANKS TO SEPARATE COLLECTION

120 MILLION EUR

WERE TRANSFERRED BY COMIECO TO THE ITALYN MUNICIPALITIES UNDER THE AGREEMENTS IN 2011

86.1 MILLION EUR

IS THE AMOUNT PAID FOR PAPER PACKAGING COLLECTION ALONE

3.9 BILLION EUR

IS THE NET BENEFIT FOR THE COMMUNITY PRODUCED BY THE SEPARATE COLLECTION OF PAPER AND BOARD PERFORMED FROM 1999 TO 2011

CONTENTS

PREFACE

The curve describing the sharp acceleration by which municipal separate paper and board collection grew from one to three million tons in the 1998-2009 period – with values settled just above this threshold in the last three years – is now flattening.

This sign should be seen within a broader context that should take several factors into account to be fully understood and appropriately evaluated. These include:
- the general macroeconomic context;
- the domestic and international recovered raw materials market;
- the dissemination and maturity of paper and board collection services;
- some specific local criticalities.

The amount of municipal separate paper and board collection, according to 2011 estimates, is now settled on 3.04 million tons, with a 0.9% decline vs. the previous year. This trend is substantially homogenous in the three macro-areas of the country, where some compensation effects among regions are, however, observed.
While moderate recovery of paper production (+0.5%) is recorded in the same period, driven by the non-packaging sector (+2.8%), the production of packaging raw materials loses just more than 2%; this implies a reduced share of recovered paper in the raw material mix.
The net recovered paper export balance is 1.25 million tons.

The general trend of urban waste production is also considered to assess separate collection data. Osservatorio Federambiente, estimates a 5% decline of total urban waste production in 2011 based on a sample represented by 40% of the national population.
The recovered paper market in 2011 was characterized by a rebound of quotations, which resulted into an increase of collection by private operators, subtracting flows from municipal collection.

These factors together outline a substantial permanence of separate paper and board collection, which should now be considered as a mature and consolidated phenomenon and an integral part of industrial pipeline dynamics.

In the above scenario, Comieco managed 1.9 million tons, with a 300thousand ton decline following the exit of collection flows, decided by the cities and the operators under the agreements, from the recycling system guaranteed by the Consortium, using the ANCI time frame that started on April 1, 2011. This phenomenon mostly concerned mixed paper collection and was located in the centre-north.
The local coverage of agreements (75.5%), which corresponds to 87,9% of the population, is still very high vs. this decline (-13.7%). The total resources transferred to the cities through the agreements (over 119 million EUR) are in line with 2010. The total resources allocated to support municipal separate paper and board collection since the launch of the consortium-based system are close to one billion EUR.

The agreements still offer a privileged viewpoint over the health of the recycling pipeline, and provide an additional

evaluation element. Collection from households can be said to ensure unchanged standard yields, albeit with declining macroeconomic indicators. This is a sign of a commitment that continues unabated where service conditions are such as to allow timely and regular collection.
Some weakness is observed in collection at business level instead. In this case, however, high recovered paper quotations, which resulted in most cases into collection upstream to the municipal collection service and a deviation of amounts towards private recycling channels, cyeart be ignored.
This general picture brought about a significant change in the consortium's activities. In fact, in 2011 it was decided to reduce the CONAI Environmental Contribution (Contributo Ambientale CONAI, CAC), paid by paper and board packaging manufacturers and importers, from 22 to 14 EUR/t as of 1/1/2012. If the further reduction that will come into force on October 1 next is considered (from 14 to 10 EUR/t), the charge for the entire pipeline will be reduced by over 50%, with all the relevant benefits in terms of system competitiveness.

The year 2011 saw a further significant novelty. Following the commitments made by the Consortium vis-à-vis the Authority for Competition and the Market (AGCM), in the second half of the year Comieco launched and gradually started operating the auction system to identify the recovered paper recycler resulting from the agreements. In the April 2011-March 2012 period, auctions allowed to allocate 537thousand tons of paper and board to recycling, i.e. 30% of the amounts managed under the agreements.

The paper pipeline, which first developed the collection system, has now definitely reached a mature stage in most of the Country, and is therefore sensitive to changes in the prices of recovered paper and to the decline of the available waste.

There is still a lot to be done on focused and local targets to collect the residual amounts of paper and board still available for collection. In other words, once the efficacy of the collection systems is ascertained and the positive experiences made on most of the national territory are acknowledged, focus should be made on the improvement of the collection circuits in some regions and on final development in others, starting with Rome and the South, working upon agreement with CONAI and with the support of all the players in the recycling pipeline – Cities, collection operators, recoverers, paper mills, packaging manufacturers.

Separate collection – and the paper pipeline representing its backbone – appears as a key component of the Green Economy. The development of urban separate collection has, in fact, allowed the reference industrial sector – paper – to satisfy its requirements to a growing extent through secondary fibres. This allowed to stop the historical dependence on foreign countries for raw material procurement, as well as, particularly, to save significant amounts of energy and climate-changing emissions. The net benefit of separate paper and board collection for the year 2011 is estimated at close to 500 million EUR.

Carlo Montalbetti
General Manager, Comieco

1. COLLECTION IS CONFIRMED WITH SOME SIGNS OF WEAKNESS

As briefly mentioned in the introduction, general indicators describe the year 2011 as a time of standstill vs. the gradual, ongoing growth recorded for about a decade and the significant fluctuations in the 2009-2010 period.
The detailed analysis rather shows multiple dynamic elements, both with reference to the Consortium's specific activity and at broader level, including the recovered paper market, exports, etc.

Separate paper and board collection amounts to just more than 3 million tons (a figure also confirmed for 2010 by the recent ISPRA report), with a reduction of about 27thousand tons vs. 2010 (-0.9%). This decline is homogeneous in the three macro-areas of the Country. Half of the increase recorded between 2009 and 2010 is substantially eroded.

A detailed regional analysis highlights several negative signs for such regions as **Piedmont** (-0.8%), **Veneto** (-1.8%), **Trentino Alto Adige** (-0.9%), **Lombardy** (-1.9%), and **Tuscany** (-5.6%) – a total of -37thousand tons – where collection is by now long consolidated. In these specific regions, the decrease of paper and board available for collection is deemed to be sharper, but upstream collection mechanisms for more precious paper types or materials deriving from collection at manufacturing units and at distribution level cyeart be ignored. Such decrease, in the centre-north, is partially made up for by the growing amounts in other regions, including first and foremost **Emilia Romegna** (+1.0% and 85.8 kg/ab/year, which is the best per-capita yield recorded in the regions), as well as **Latium** (+4,300 tons) and **Marche** (+5.5%).
Tuscany (79.3 kg/ab/year) is confirmed as the reference region for the centre, despite the recorded decline.
The south is a different story. Here, negative signs are recorded in the bigger regions **Campania**, **Puglia**, and **Sicily** (-12 million tons globally), with **Abruzzo** alone making up for the decline **in absolute terms. Sardinia is by now stable at 70-75thousand** t/year, by which it ranks first in the south by yield (44.6 kg/ab/year).

The decline recorded in the three above-mentioned regions can surely be a result of decreased availability, but collection upstream to the municipal circuits, combined with some specific challenges (e.g. Foggia) should necessarily be considered.

2. COLLECTION UNDER THE AGREEMENTS

The role of the Consortium is one of the dynamic elements of the above-described scenario.
In 2011 Comieco was in charge of approximately 1.9 million tons of paper and board. This means 300thousand tons less (-13.7%) compared to 2010. The figure is not in contrast with a territorial coverage that sees just less than 87.9% of the population (-1.7% vs. 2010) and 75.5% of the Cities (-4.3%) involved in the agreements.

“Partial” management systems, provided for by the Technical Annex, are in place. These allow collection operators to adjust the agreement management format to specific operational and plant-related needs, thus maximizing the economic return.

Based on this data, the role of the Consortium as a party required to participate to the recycling of the collected materials accounts for 6% of municipal collection. On the other hand, if focus is made on paper and board materials as a whole (apparent recovered paper collection), Comieco accounts for 30.1% vs. 34.7% in 2010.

3. Collection yield: the Italyns are not reducing separate collection

Per-capita collection in 2011 is estimated at 50.6 kg/ab (this figure is correct compared to the one published last year following the update of the reference population – see the note on the method). This value is declining homogeneously in the three macro-areas (-0.5 kg/ab).

Local leadership is confirmed, with **Emilia Romegna** consolidating its position (85.8 kg/ab) vs. **Trentino Alto Adige** (83.3 kg/ab), at a standstill. In the centre, **Tuscany** stops at 79.3 kg due to a significant decline of collection (-4.5%), falling below the symbolic threshold of 80 kg per capita. This figure is anyway much higher than in the other regions of the same area, which still show significant development rates, though growing.

"Competition" is harsher in the south with **Abruzzo** (43.4 kg/ab) competing for local leadership with **Sardinia** (44,6 kg/ab) in terms of collection increase. According to estimates, both regions could reach the average national data in the short term.

4. Considerations: a 1 million EUR target

The resources transferred locally, in terms of considerations paid by the Consortium, amount to 86.1 million EUR. This figure, lower than in 2010 (-7.2%), is a result of the decline of the managed collected amounts, and particularly of packaging.

At the same time, the commitment of recyclers is growing, assessed on the ground of recycling of the similar pulp fraction (graphic paper) provided to the Consortium with collection. Overall, both effects compensate each other, and the total economic resources transferred locally are confirmed just below 120 million EUR. In other words, the same resources are allocated to the Cities vs. reduced collection entrusted to the Consortium. In general terms, from 1998 to the end of 2011 Comieco transferred over 877 million EUR to the cities and to the operators to recycle just less than 11 million tons of packaging.

Considering the commitment of recyclers too, on the present day of disclosure of the 17th Report, the overcoming of the one billion EUR threshold can be yearunced.

5. THE AUDIT SYSTEM

The new reference thresholds enforced in 2010 (1^{st} quality level <3.0% for 1.01+1.02, <1.5% for 1.04+1.05) turned out easy to meet by organizing collection effectively.

The monitoring plan, implemented on the ground of the provisions of the Technical Annex, implied a total of about 2,100 sampling sets for the purpose of the management of the agreements.
The mean foreign fraction rates observed amount to 2.20% for 1.01+1.02 (1,054 analyses performed) with a 0.4% decrease vs. 2010. This figure benefits from operational changes in the management of the agreements, particularly in the centre.

As far as 1.04+1.05 is concerned (1,041 sampling sets), the mean foreign fraction rate observed was 0.60% vs. 069% in 2010.
Such data is consistent with a monitoring process focused solely on the analyses performed on flows originating directly from collection. The sample thus monitored (70% of the performed sampling sets) provides mean foreign fraction values of 2.57% for 1.01+1.02 and of 0.66% for 1.04+1.05.

During 2011, as in the previous years, Comieco carried out audits at sorting plants, paper mills, and processing plants supported by three specialized companies, with the following goals:
ensuring data transparency and reliability;
providing guarantees on system control levels;
ensuring appropriate system operation while minimizing litigations.
In 2011, audits were performed at 113 facilities, including 57 sorting plants, 27 paper mills, and 29 processors.
The audits at the sorting plants were aimed at checking compliance with contract requirements and the achievement of a mass balance on transit materials, originating from parties under the agreements and directed towards the paper mills. If the sorting plants had been awarded materials resulting from the Comieco auctions, the check was also made on compliance with the Comieco auction rules.

The audits at the paper mills were aimed at checking compliance with the mandate agreement entered into with the Consortium, as well as the appropriateness of the statements made vis-à-vis Comieco with respect to the used recovered paper and to the production of packaging raw materials.
In the case of processors, the aim was to check the appropriateness of the statements made vis-à-vis Comieco with respect to packaging production.
The criticalities observed upon the audits were formally addressed by the Consortium through the implementation of specific corrective actions.

6. CRISIS MONITOR
THE STATUS OF COLLECTION IN METROPOLITAN AREAS

The monitoring activity continued in 2011, in cooperation with service operators, in a number of cities, including **Florence**, **Milan**, **Naples**, **Rome**, and **Turin**, which were used as dedicated reference locations to monitor waste production, as well as separate paper and board collection.
On the other hand, data was not disclosed on the other regional capitals, in that the figures on the amounts managed under the agreements alone can be misleading if the implementation of the entry/exit mechanisms defined in the Technical Annex is not clear enough.
Data deserves some comments with respect to the submitted sample.
The five cities show a mean 3% decline of total waste production. This figure is consistent with the estimates of Federambiente abount a maximum 5% annual decline.

The decline is sharper if only non-separate waste flows are considered: in this case it amounts to -5.2% globally. Separate collection shows a better performance. In three cities (**Milan**, **Turin**, and **Naples**), the net collected amount is declining by 1.5% on average, but the corresponding sharper decline of the produced waste results into a positive balance and a growing separate collection rate, just below one net point in the three cities.
In the case of **Florence**, while dynamics for production of waste "as is" are similar (-6.3%), amounts are growing for separate collection (+900 tons), and bring the separate collection rate above 40%.
Similar indicators are found in **Rome** (negative for waste "as is" and for total production, positive for separate collection), but the growth of the amounts collected separately is higher and such as to imply a growth of separate collection above two percent points.

7. VALUABLE RECOVERED PAPER

Few changes are observed in the local plants and, therefore, in the average provision distance, which is confirmed in line with last year (17.1 km).
The recycling pipeline in Italy is managed by 327 sorting plants and 65 paper mills.
A new entry is the auction-based allocation mechanism introduced by Comieco in the second half of 2011. At the first operational stage, no substantial changes were observed, but as soon as the auction system starts full operation, dynamic factors may emerge in the management of recovered paper flows.
Comieco accounts for 30.1% of apparent domestic collection (recovered paper consumption + export – import).
All recovered paper management indicators are in countertrend vs. 2012, but fluctuations are more moderate than in the previous two-year period. Recovered paper consumption is declining (-2.9%), albeit vs. a moderate increase of paper production (+0.5%). The cause for reduced domestic use can be attributed to the decline of the packaging sector (-2.2%) that uses recovered paper fibres more than others (the usage rate

per product unit is 110-120%), while other paper products are gaining importance, including the hygienic-sanitary sector driven by domestic consumption (exports are stable, and anyway positive for the sector).
Total paper production amounts to 9.1 million tons, comparable with the figure of 2000.

An additional indicator supporting the above-described trends is the raw material mix of the sector, with packaging decreasing from 49.3% to 48.6%. As a consequence, the use of new fibres grows to 34.1% (+0.6%), whereas the rate of non-fibrous raw materials remains unchanged (17.3%).
Exports are recovering (+100thousand tons) vs. slightly declining imports. The net balance is 1.25 million tons of recovered paper headed towards foreign countries (+10.2%).

Recovered paper quotations are following an interesting trend: they increased in the first quarter of 2011 and settled, in the central months of the year, on the highest levels observed in the past decade. There followed a quick decline in the last quarter. The first months of 2012 show a southden but more moderate settlement on a price about 25-30% lower than the average values of 2011.

8. PACKAGING MANAGEMENT: CONFIRMED EFFICIENCY AND EFFICACY

The trend of packaging recycling and recovery rates is a consequence of the above-described factors.
While the amount of apparent packaging consumption increases (+2.3%), the recycled amount of these types of waste is also improving (3.5 million tons).
Hence a 79.6% recycling rate for 2011, 0.9% up compared to the previous year. This figure points out to constant growth considering that it was highest in 2009 (80.4%), but this was mostly due to a declining amount of apparent consumption.

A slight decrease is recorded (-50thousand tons) for the rate of packaging used for energy recovery, which accounts for 8% of total recovery (87.6%).

9. RECYCLING CONFIRMED AS A HIGH-VALUE ACTIVITY

This year's report contains an update of the detailed Cost-Benefit Analysis included in the past editions, describing the impact of separate paper and board collection performed by the Cities. The update concerns the year 2011 and all the data developed starting from 1999.
The considered cost items include:
- the higher cost due to separate collection vs. collection of waste "as is";
- the missed benefit connected with the choice not to use paper-based materials for energy recovery.

The total cost of these two items is estimated around 130 million EUR.

Benefits result from:
• avoided emissions;
• avoided cost for disposal of the recovered material;
• value of the generated raw materials;
• value of employment in related business.

The total resulting benefit is estimated at just less than 610 million EUR.
The net benefit for 2011 alone, resulting from such estimate (the sources are the same used in the past years) amounts to approximately 478 million EUR.

Over 13 years (1999-2011), the total net benefit is just below 4 billion EUR (1.1 billion EUR of higher costs vs. 5 million EUR of accrued benefits).

The above summarized data requires some consideration.

The cost of services is rising in 2011, but the benefit resulting from the avoided emissions and, particularly, the value of generated raw materials grow at the same time, considering 2011 as the year of maximum historical quotation of recovered paper. This item is emerging in these past few years as having the highest impact on fluctuations.
An analysis of the time frames reflecting the terms of the General ANCI-CONAI Agreements (1999/2003 - 2004/2008 – 2009/2011) shows that the net benefit grew from an average annual value of 220 million EUR at baseline to 315 million EUR within the framework of the 2nd agreement and up to 418 million EUR/year in the last three-year period (+90% annually over a decade).

At macro-area level, based on the present collection standards and related situations, and particularly on the charges for the management of non-separate waste, the centre and north of the country show a particularly positive performance, even improved compared to last year, with an increased average unit benefit – estimated on the amounts of paper and board collected separately by the Cities – of 3 EUR/t, albeit vs. a slightly declining collection volume.
The south is at a standstill instead. The average unit benefit for the 1999/2011 period is estimated at 134 EUR per collected ton vs. a total municipal paper and board collection of more than 29 million tons.

CHARTS AND TABLES

ACRONYMS

FMS FRAZIONI MERCEOLOGICHE SIMILARI (SIMILAR PRODUCT FRACTIONS)(NON-PACKAGING PAPER AND BOARD)
SC SEPARATE COLLECTION
UW URBAN WASTE
% PERCENT RATE
n NUMBER
t TONS
ab INHABITANTS

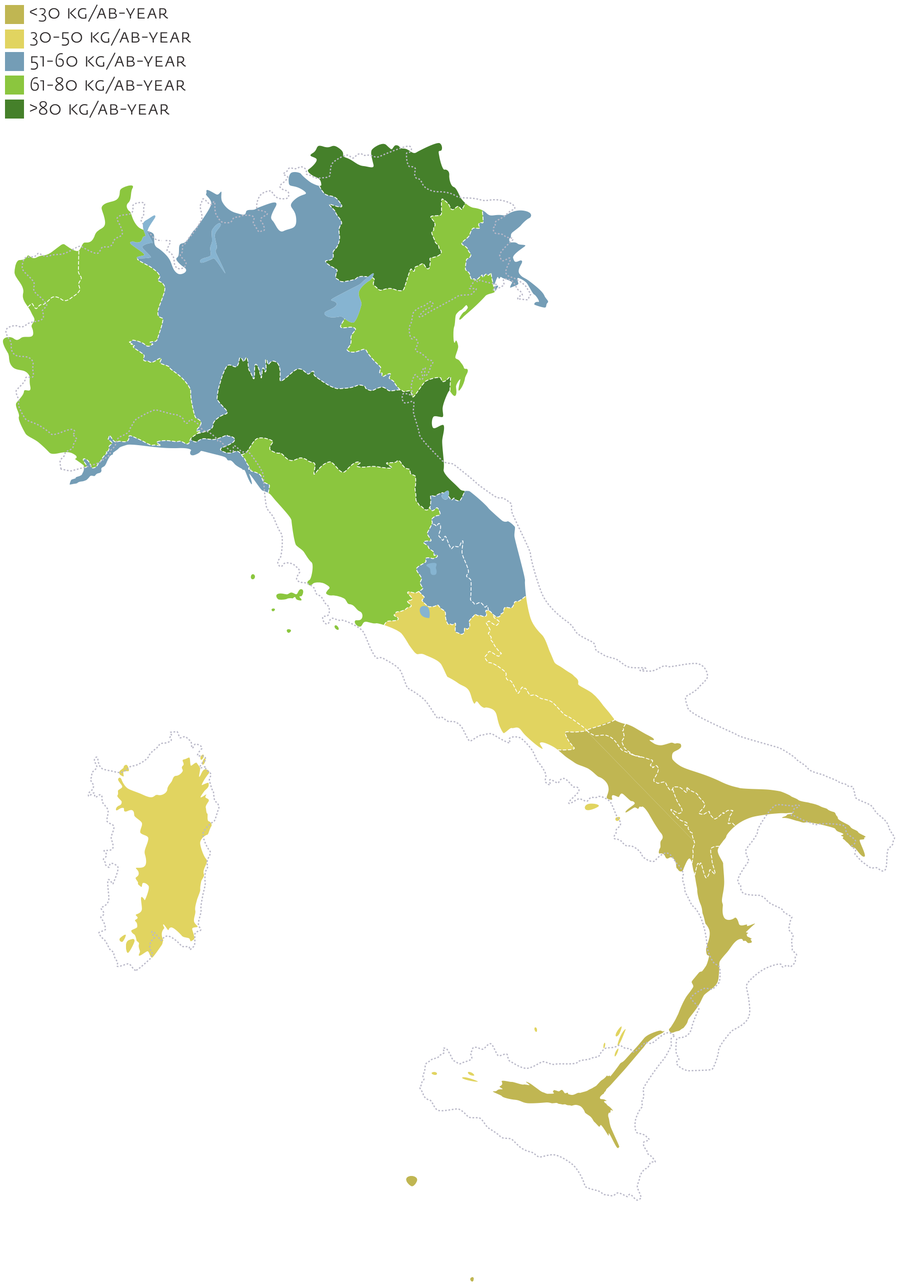
TABLE 1

Trend of municipal separate paper and board collection by regions.
Year 2011 and changes vs. 2010.
(Source: Comieco)

	TOTAL INHABITANTS	2011	Δ 2010-2011	Δ 2010-2011
	n	t	t	%
EMILIA ROMEGNA	4,337,979	372,080.2	3,727.6	1.0%
FRIULI VENEZIA GIULIA	1,230,441	68,951.1	490.7	0.7%
LIGURIA	1,615,064	90,573.6	1,304.1	1.5%
LOMBARDY	9,742,179	539,564.7	-10,378.5	-1.9%
PIEDMONT	4,432,571	330,450.0	-2,798.5	-0.8%
TRENTINO ALTO ADIGE	1,010,328	84,146.4	-789.9	-0.9%
VALLÉE D'AOSTE	127,065	9,715.4	139.2	1.5%
VENETO	4,885,549	296,888.0	-5,537.0	-1.8%
NORTH	**27,381,176**	**1,792,369.4**	**-13,842.2**	**-0.8%**
LATIUM	5,626,710	255,616.4	4,339.8	1.7%
MARCHE	1,569,578	94,043.1	4,919.2	5.5%
TUSCANY	3,707,818	293,956.5	-17,509.7	-5.6%
UMBRIA	894,222	53,127.2	340.7	0.6%
CENTRE	**11,798,328**	**696,743.2**	**-7,910.1**	**-1.1%**
ABRUZZO	1,334,675	57,937.1	7,384.0	14.6%
BASILICATA	590,601	13,310.9	-576.9	-4.2%
CALABRIA	2,008,709	37,286.7	707.6	1.9%
CAMPANIA	5,812,962	166,268.3	-5,692.3	-3.3%
MOLISE	320,795	7,041.6	127.0	1.8%
PUGLIA	4,079,702	114,877.9	-4,925.1	-4.1%
SARDINIA	1,671,001	74,451.1	-10.4	0.0%
SICILY	5,037,799	76,384.9	-1,956.2	-2.5%
SOUTH	**20,856,244**	**547,558.5**	**-4,942.3**	**-0.9%**
ITALY	**60,035,748**	**3,036,671.1**	**-26,694.6**	**-0.9%**

FIGURE 1

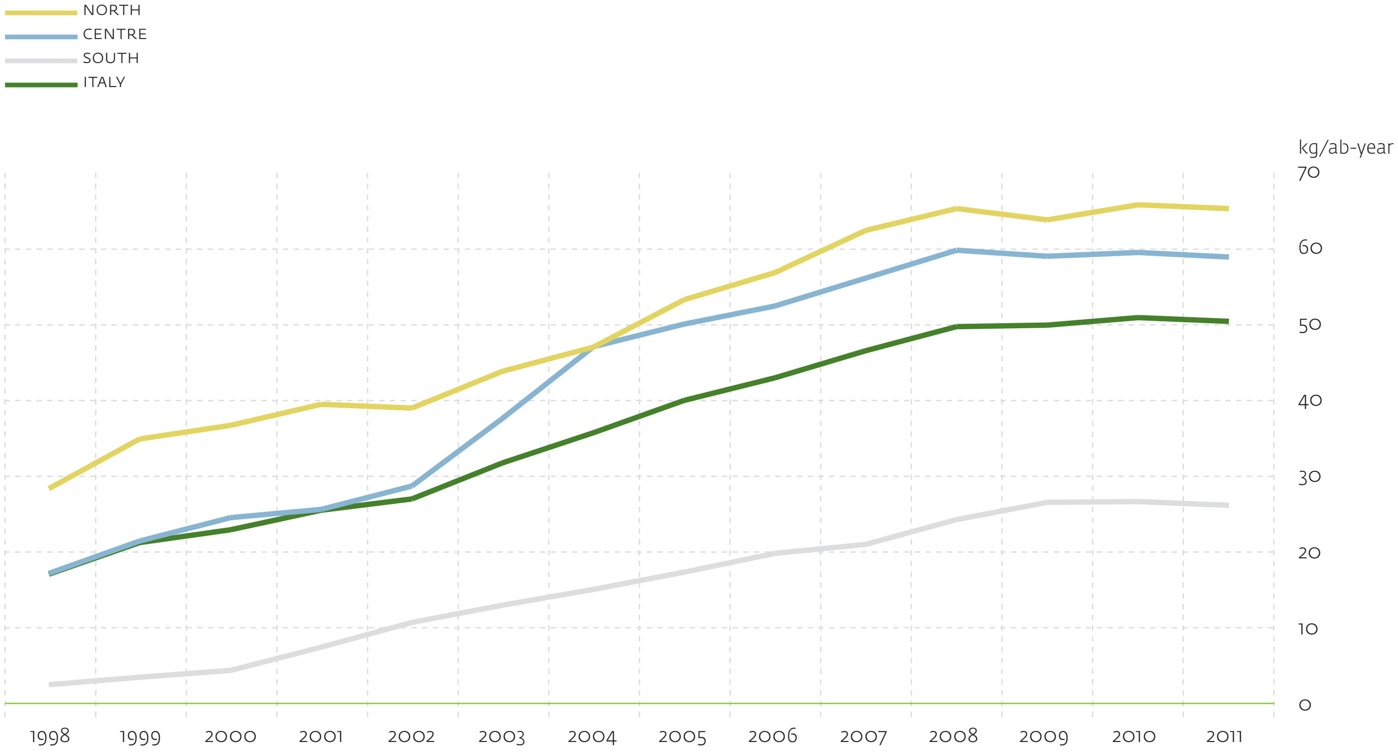
Municipal per-capita separate paper and board collection by regions and by areas. Year 2011.
(Source: Comieco)



	kg/ab-year
EMILIA ROMEGNA	85.8
FRIULI VENEZIA GIULIA	56.0
LIGURIA	56.1
LOMBARDY	55.4
PIEDMONT	74.6
TRENTINO ALTO ADIGE	83.3
VALLÉE D'AOSTE	76.5
VENETO	60.8
NORTH	**65.5**
LATIUM	45.4
MARCHE	59.9
TUSCANY	79.3
UMBRIA	59.4
CENTRE	**59.1**
ABRUZZO	43.4
BASILICATA	22.5
CALABRIA	18.6
CAMPANIA	28.6
MOLISE	22.0
PUGLIA	28.2
SARDINIA	44.6
SICILY	15.2
SOUTH	**26.3**
ITALY	**50.6**

FIGURE 2

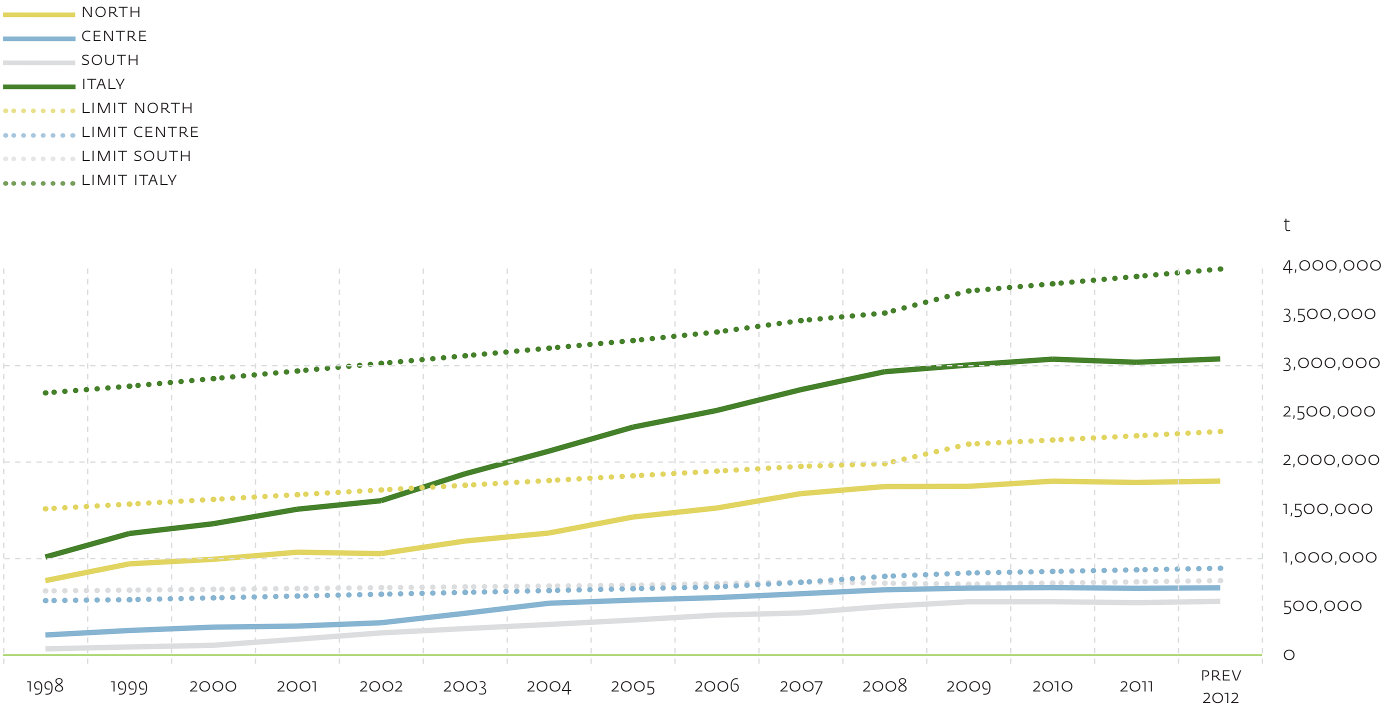
Municipal per-capita separate paper and board collection by areas. 1998-2011 historical data set.
(Source: Comieco)



	kg/ab 2010	kg/ab 2011	Δ kg/ab 1998/2011	Δ % 1998/2011
NORTH	66.0	65.5	37.2	131.3
CENTRE	59.7	59.1	42.0	245.3
SOUTH	26.8	26.3	23.9	993.9
ITALY	**51.1**	**50.6**	**33.6**	**197.5**

FIGURE 3

Municipal separate paper and board collection. 1998-2011 trend and forecasts for 2012.
(Source: Comieco)



		NORTH	CENTRE	SOUTH	ITALY
2011	t	1,792,369	696,743	547,558	3,036,670
2012 FORECAST	t	1,807,224	702,118	562,398	3,071,740

TABLE 3

Comparison of urban waste production, overall separate collection, and municipal separate paper and board collection in Italy. 2009-2011 period.
(Source: Comieco and ISPRA)

		2010 ISPRA	2011 COMIECO	2010/2011 Δ %
UW	t	32,479,112	31,504,739	-3.0
TOTAL SC	t	11,452,608	11,807,639	3.1
MUNICIPAL PAPER AND BOARD SC	t	3,062,720	3,036,671	-0.9
% TOTAL SC VS. TOTAL UW PRODUCTION	%	35.3	37.5	
% MUNICIPAL PAPER AND BOARD SC VS. TOTAL SC	%	26.7	25.7	

TABLE 4

Agreements signed in the 2001-2011 period and coverage rate of the agreements.
(Source: Comieco)

			2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
NORTH	SIGNED AGREEMENTS	n	170	215	225	224	228	211	208	202	203	202	186
	COVERED CITIES	%	58.5	63.7	69.9	71.8	75.4	76.5	78.1	77.4	80.9	81	74.9
	COVERED INHABITANTS	%	69.5	72.3	76.4	79.5	81.4	82.5	83.2	82.4	85.5	85.9	82.8
CENTRE	SIGNED AGREEMENTS	n	35	59	80	88	97	103	109	111	124	124	118
	COVERED CITIES	%	62.5	63.7	70.3	72.2	77.4	78.4	80.1	79.2	77.9	75.4	73.7
	COVERED INHABITANTS	%	81.3	81.4	87.4	88.1	91.1	91.5	93.9	93.4	94	93.4	92.6
SOUTH	SIGNED AGREEMENTS	n	124	197	281	328	334	302	329	414	428	454	487
	COVERED CITIES	%	44.7	47.8	57.1	63.2	68.6	75.6	77.8	80.8	79.5	79.5	77.4
	COVERED INHABITANTS	%	68.9	68.8	78.8	84.4	87.1	89.2	91.7	94.2	92.5	92.5	91.8
ITALY	**SIGNED AGREEMENTS**	n	**329**	**471**	**586**	**640**	**659**	**616**	**646**	**727**	**755**	**780**	**791**
	COVERED CITIES	%	**54.6**	**58.6**	**65.9**	**69.2**	**73.5**	**76.5**	**78.2**	**78.7**	**80.1**	**79.8**	**75.5**
	COVERED INHABITANTS	%	**71.5**	**72.8**	**79.4**	**82.9**	**85.3**	**86.6**	**88.2**	**88.6**	**89.5**	**89.6**	**87.9**

TABLE 5

Local coverage by regions as at December 31, 2011.
(Source: Comieco)

	CITIES	CITIES UNDER THE AGREEMENTS		INHABITANTS	INHABITANTS UNDER THE AGREEMENTS		COLLECTION UNDER THE AGREEMENTS
	n	n	%	n	n	%	t
EMILIA ROMEGNA	341	330	96.8	4,337,979	4,282,735	98.7	152,070.3
FRIULI VENEZIA GIULIA	218	177	81.2	1,230,441	1,155,100	93.9	47,325.7
LIGURIA	235	108	46.0	1,615,064	1,232,128	76.3	44,419.4
LOMBARDY	1,547	912	59.0	9,742,179	7,058,524	72.5	290,524.3
PIEDMONTE	1,206	1,077	89.3	4,432,571	4,019,439	90.7	228,160.2
TRENTINO ALTO ADIGE	331	324	97.9	1,010,328	996,847	98.7	62,802.7
VALLÉE D'AOSTE	74	74	100.0	127,065	127,065	100.0	9,337.2
VENETO	581	392	67.5	4,885,549	3,809,919	78.0	138,567.9
NORTH	**4,533**	**3,394**	**74.9**	**27,381,176**	**22,681,757**	**82.8**	**973,207.7**
LATIUM	378	219	57.9	5,626,710	5,092,448	90.5	132,906.5
MARCHE	246	192	78.0	1,569,578	1,368,730	87.2	58,583.1
TUSCANY	287	257	89.5	3,707,818	3,600,533	97.1	210,516.7
UMBRIA	92	71	77.2	894,222	858,975	96.1	34,800.4
CENTRE	**1,003**	**739**	**73.7**	**11,798,328**	**10,920,686**	**92.6**	**436,806.7**
ABRUZZO	305	233	76.4	1,334,675	1,236,551	92.6	51,440.3
BASILICATA	131	64	48.9	590,601	372,485	63.1	8,627.0
CALABRIA	409	312	76.3	2,008,709	1,716,051	85.4	25,855.3
CAMPANIA	551	454	82.4	5,812,962	5,348,290	92.0	148,954.2
MOLISE	136	36	26.5	320,795	159,370	49.7	4,291.6
PUGLIA	258	225	87.2	4,079,702	3,910,602	95.9	109,081.7
SARDINIA	377	277	73.5	1,671,001	1,437,568	86.0	61,515.3
SICILY	390	378	96.9	5,037,799	4,969,930	98.7	75,590.7
SOUTH	**2,557**	**1,979**	**77.4**	**20,856,244**	**19,150,847**	**91.8**	**485,356.1**
ITALY	**8,093**	**6,112**	**75.5**	**60,035,748**	**52,753,290**	**87.9**	**1,895,370.5**

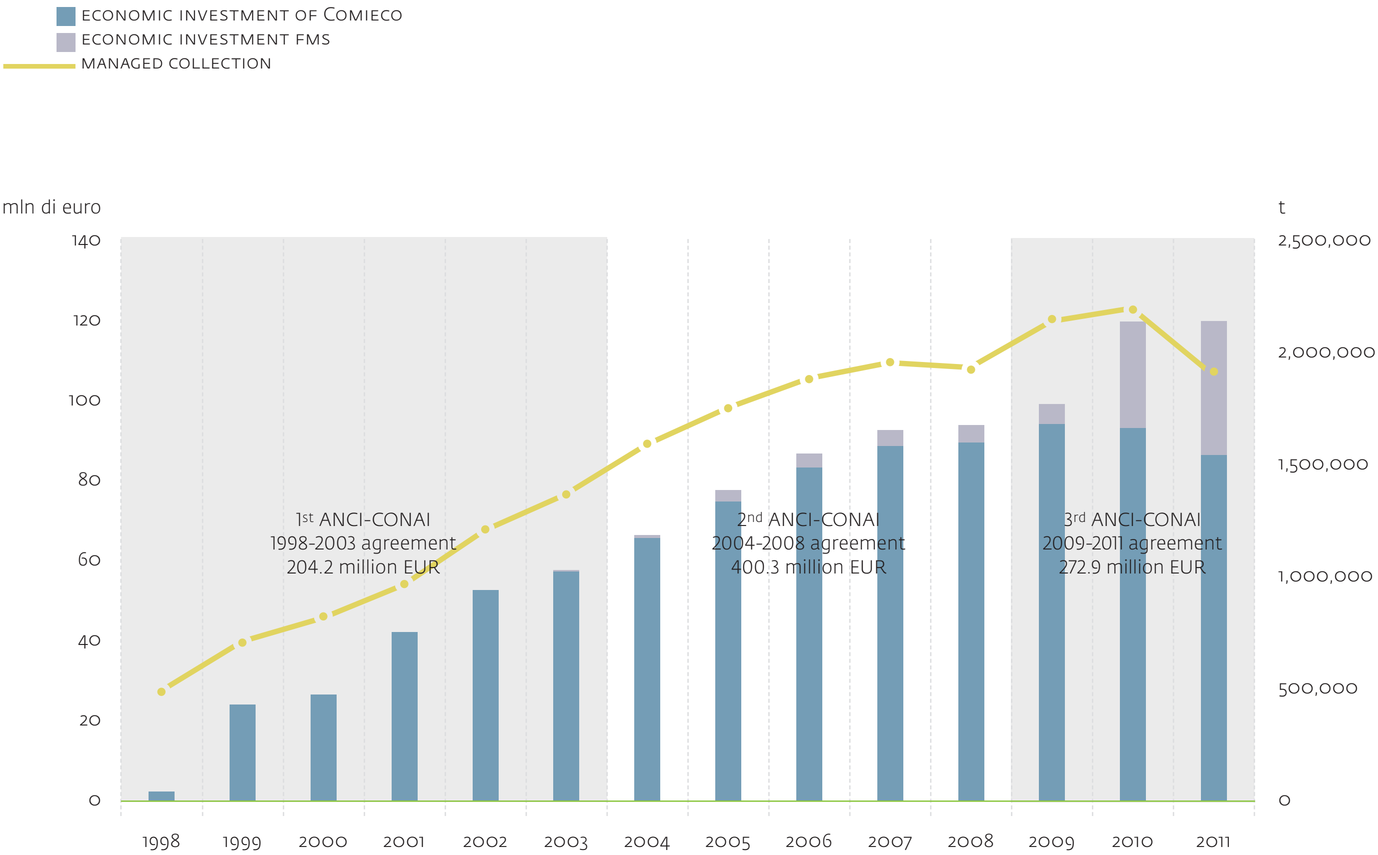
TABLE 6

Resources allocated to parties under the agreements in 2011. Detail by areas.
(Source: Comieco)

REGION	INHABITANTS UNDER THE AGREEEMENTS	MANAGED PACKAGING	ECONOMIC INVESTMENT OF COMIECO (PACKAGING)		ECONOMIC INVESTMENT OF RECYCLERS (SIMILAR PRODUCT FRACTIONS)	
	n	t	euro	euro/ab, under the agreements,	euro	euro/ab,under the agreements,
NORTH	22,681,757	502,388.5	44,413,279	1.96	17,787,411	0.78
CENTRE	10,920,686	225,580.4	19,305,218	1.77	7,940,191	0.73
SOUTH	19,150,847	282,602.7	22,398,737	1.17	7,598,340	0.40
ITALY	**52,753,290**	**1,010,572.6**	**86,117,233**	**1.63**	**33,325,942**	**0.63**

FIGURE 4

Economic investment 1998-2011.
(Source: Comieco)



		1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	TOTALE
ECONOMIC INVESTMENT COMIECO	million EUR	2.2	24.0	26.4	42.0	52.5	57.1	65.4	74.5	82.9	88.3	89.2	93.8	92.8	86.1	877.2
ECONOMIC INVESTMENT FMS	mllion EUR	0.0	0.0	0.0	0.0	0.1	0.3	0.7	2.8	3.5	4.0	4.3	4.9	26.5	33.3	80.4
MANAGED COLLECTION	kt	485.4	705.5	810.8	958.6	1,201.8	1,361.9	1,584.1	1,747.5	1,879.0	1,949.6	1,928.1	2,134.2	2,192.7	1,895.4	20,834.5

* Including 31 million EUR for energy recovery, 1999-2002 period.

FIGURE 5

Per-capita waste collection in the sample cities Turin, Milan, Florence, Rome, and Naples. 2004-2011 data. (Source: Comieco)

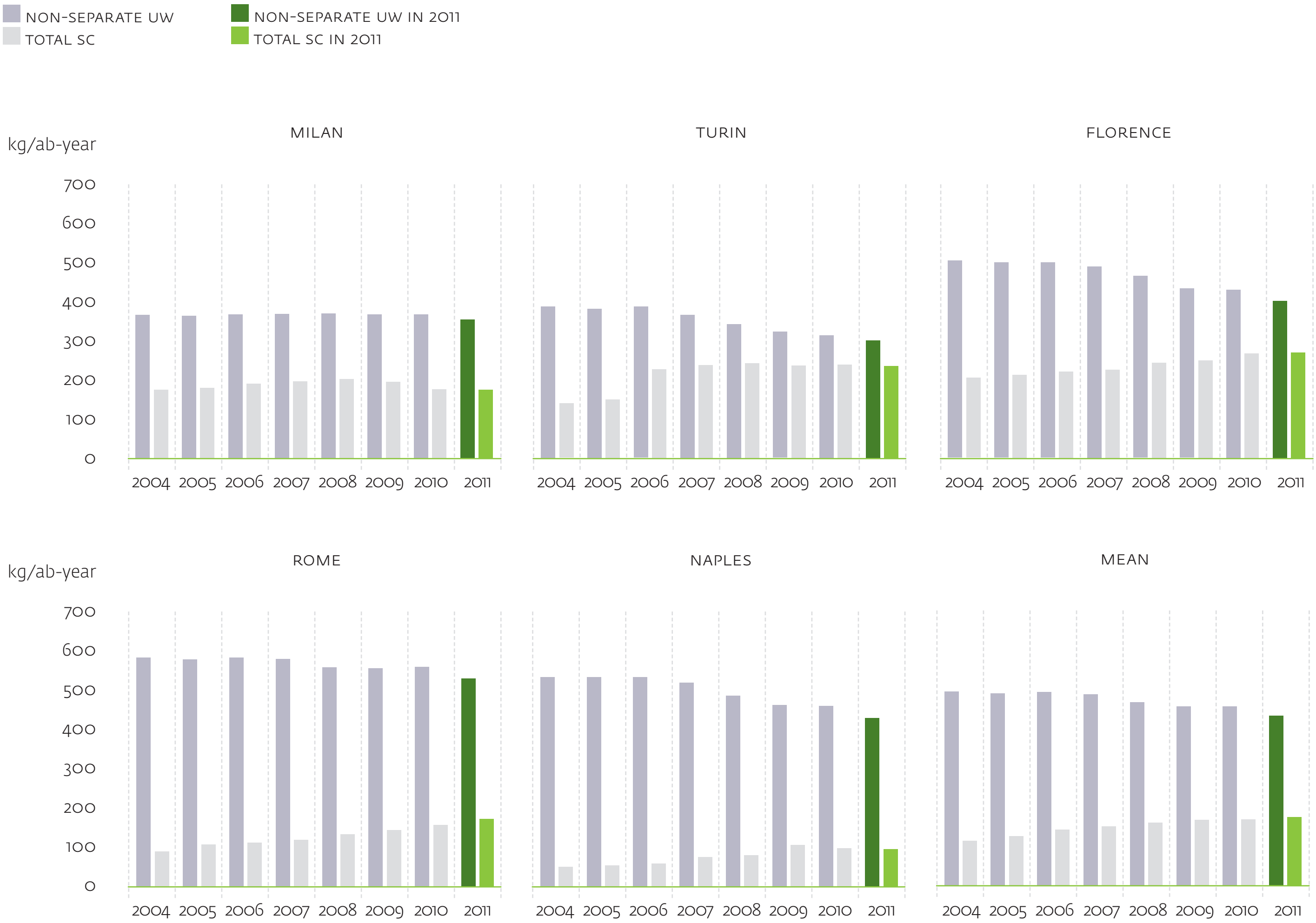
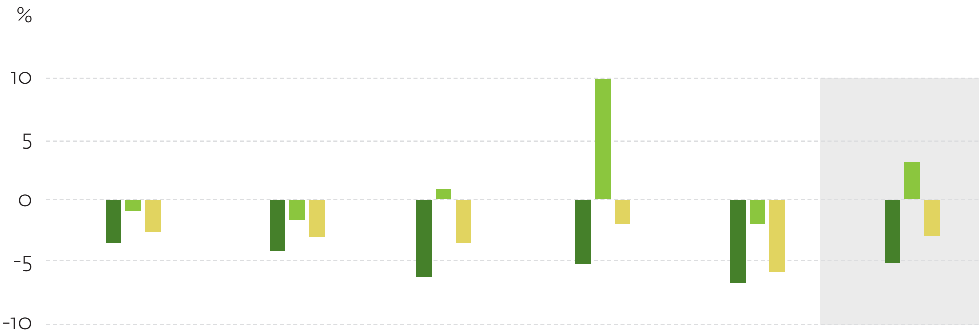


FIGURE 6

Waste collection in the sample cities Turin, Milan, Florence, Rome, and Naples. 2010-2011 variations.
(Source: Comieco)

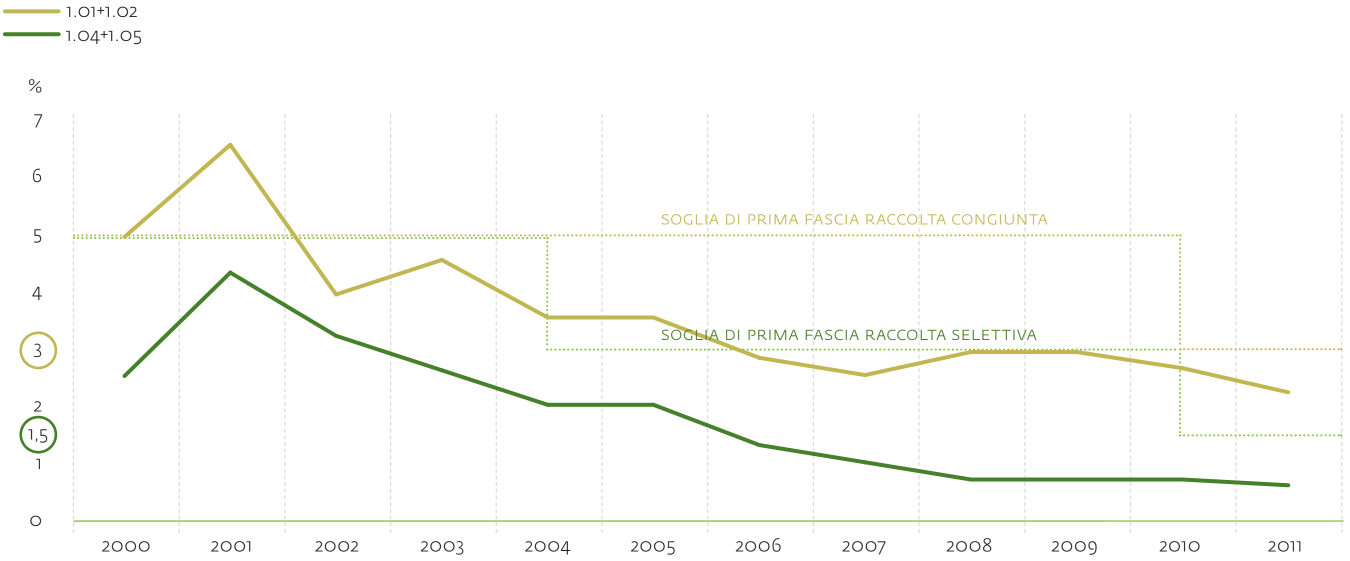


	MILAN	TURIN	FLORENCE	ROME	NAPLES	MEAN
Δ % TOT NON-SEP. UW	-3.6	-4.2	-6.3	-5.3	-6.8	-5.2
Δ % TOT SC	-1.0	-1.7	0.9	9.8	-2.0	3.1
Δ % TOT UW	-2.7	-3.1	-3.6	-2.0	-5.9	-3.0

2011		MILAN	TURIN	FLORENCE	ROME	NAPLES	TOTALE
TOT SC	t	229,035	211,423	98,898	443,031	95,220	1,077,607
TOT UW	t	691,662	481,428	246,312	1,797,311	517,204	3,733,917
UW/SC	%	33.1	43.9	40.2	24.6	18.4	-
N-S UW	t	462,627	270,005	147,414	1,354,280	421,984	2,656,310

FIGURE 7

Quality of the collected material (mean trend of foreign fractions). 2000-2011 period.
(Source: Comieco)



		1ST ANCI – CONAI AGREEMENT				2ND ANCI – CONAI AGREEMENT					3RD ANCI – CONAI AGREEMENT		
COLLECTION	**DATI**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
1.01+1.02	ANALYZED AMOUNTS (kg)	n,d,	26,166	42,657	119,814	103,884	76,572	188,826	227,852	214,764	252,289	279,917	220,178
	FOREIGN FRACTIONS (%)	4.9	6.5	3.9	4.5	3.5	3.5	2.8	2.5	2.9	2.9	2.6	2.2
	PERFORMED ANALYSES (n)	27	171	275	533	443	321	772	930	990	1,174	1,302	1,054
1.04+1.05	ANALYZED AMOUNTS (kg)	n.d.	25,455	33,181	62,104	119,124	62,936	145,873	181,758	200,085	202,555	193,863	186,802
	FOREIGN FRACTIONS (%)	2.5	4.3	3.2	2.6	2.0	2.0	1.3	1.0	0.7	0.7	0.7	0.6
	PERFORMED ANALYSES (n)	26	122	165	281	335	291	779	1,041	1,145	1,176	1,068	1,041

Notes:
The new CTA*, in force since April 1, 2010, redefined the quality brackets and lowered the 1st-bracket specifications.

The above results refer to the total product analyses performed at sorting plants both on incoming and on outgoing materials in order to determine the amount of the considerations due to the parties under the agreements.

* CTA: Comieco Technical Annex

TABLE 7

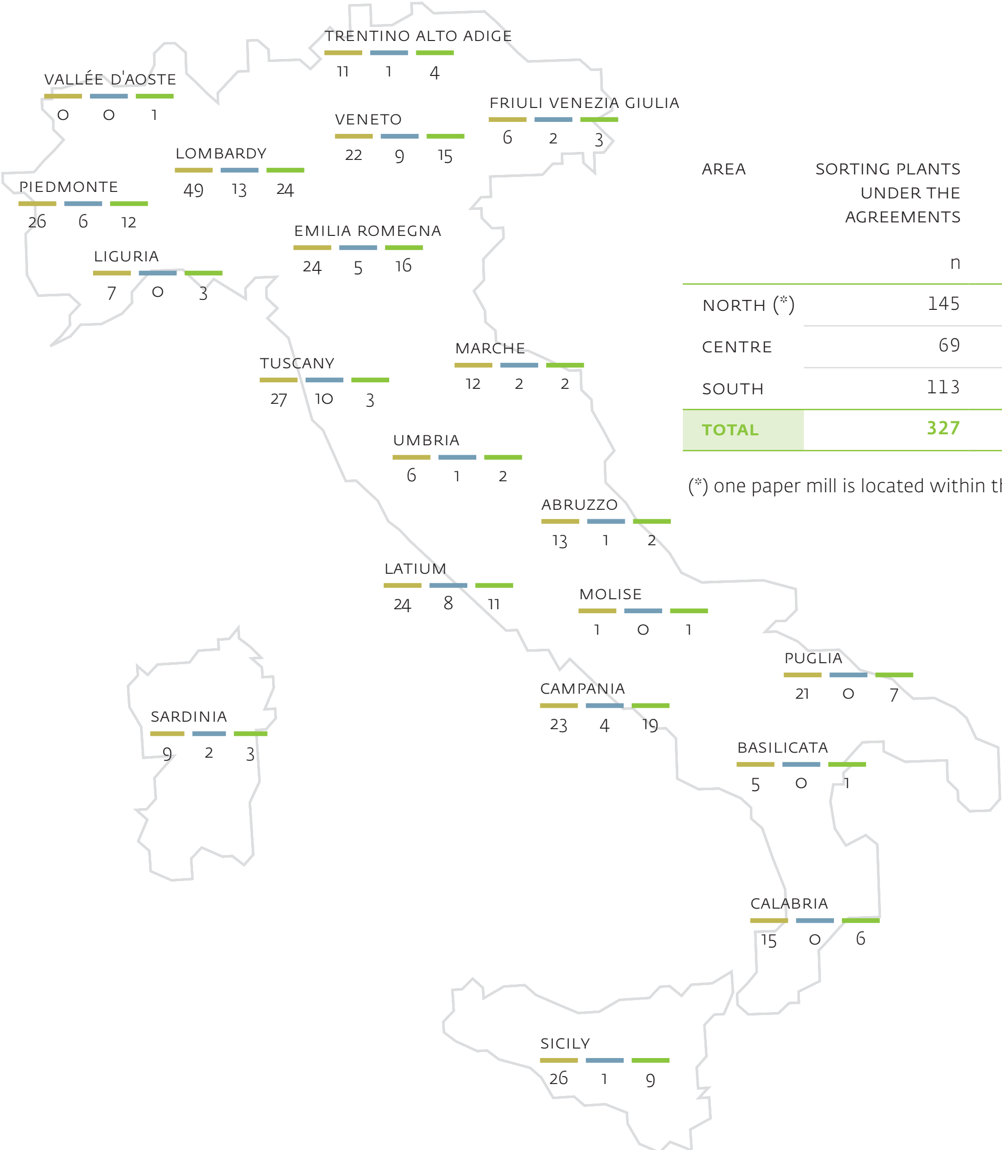
Quality of the collected material (mean trend of foreign fractions). Detailed by macro-areas. 2010-2011 comparison. (Source: Comieco)

	YEAR 2010		YEAR 2011		Δ 2010-2011
	NO. OF ANALYSES	FOREIGN FRACTION	NO. OF ANALYSES	FOREIGN FRACTION	FOREIGN FRACTION
	n	%	n	%	%
1.01+1.02					
NORTH	693	1.91	486	1.95	0.04
CENTRE	306	4.31	286	2.44	-1.87
SOUTH	303	2.51	282	2.39	-0.12
ITALY	**1,302**	**2.62**	**1,054**	**2.20**	**-0.42**
1.04+1.05					
NORTH	471	0.50	441	0.42	-0.08
CENTRE	246	0.69	219	0.62	-0.07
SOUTH	351	0.93	381	0.80	-0.13
ITALY	**1,068**	**0.69**	**1,041**	**0.60**	**-0.09**

FIGURE 8

The recycling network in 2011.
(Source: Comieco)

SORTING PLANTS UNDER THE AGREEMENTS
PAPER MILLS UNDER THE AGREEMENTS
PLANTS FOR COLLECTION OF SECONDARY AND TERTIARY PACKAGING



AREA	SORTING PLANTS UNDER THE AGREEMENTS	MEAN DISTANCE FOR CONFERMENT	PAPER MILLS UNDER THE AGREEMENTS	SORTING PLANTS II & III
	n	km	n	n
NORTH (*)	145	16.2	36	78
CENTRE	69	16.4	21	18
SOUTH	113	18.6	8	48
TOTAL	**327**	**17.1**	**65**	**144**

(*) one paper mill is located within the territory of the Republic of San Marino.

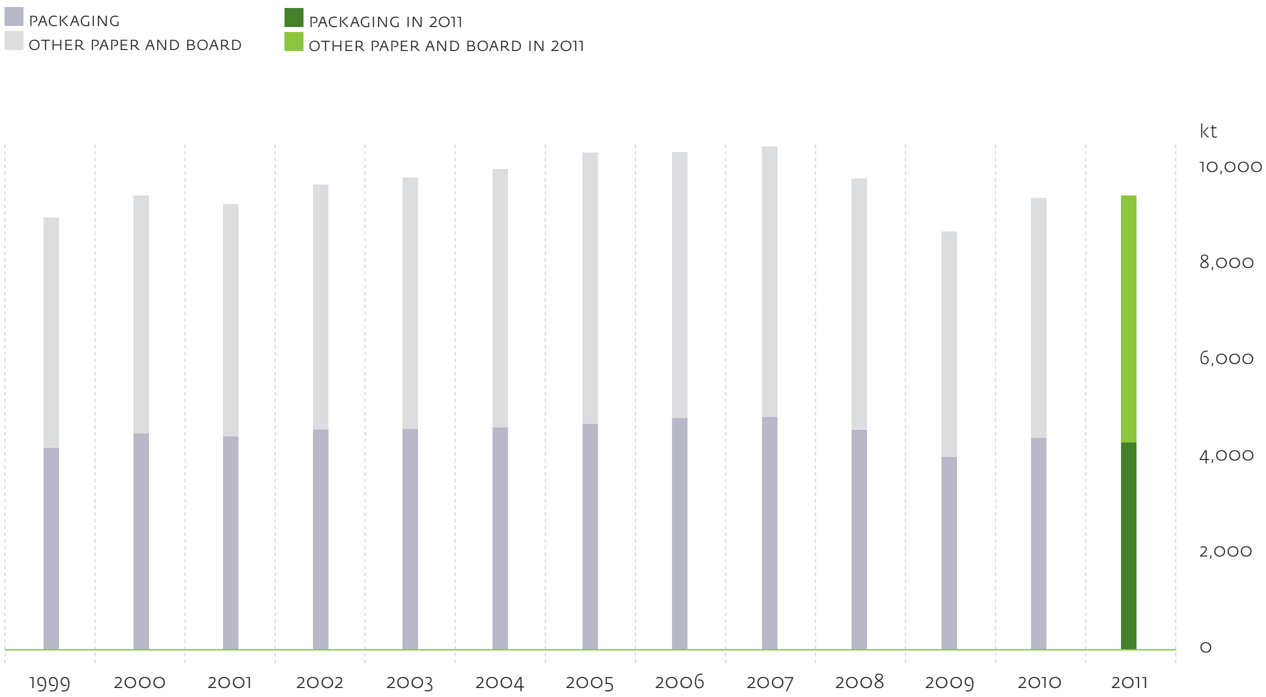
TABLE 8

Production, import, export, and apparent consumption of paper and board in 2011.
(Source: ISTAT data processed by Assocarta and Assocarta estimates)

		PRODUCTION (A)	IMPORT (B)	EXPORT (C)	APPARENT CONSUMPTION (A+B-C)
PAPER AND BOARD FOR CORRUGATED BOARD	t	2,335,579	1,366,031	158,649	3,542,961
CARDBOARD FOR CASES	t	590,593	593,351	480,697	703,247
OTHER WRAPPING AND PACKAGING PAPER AND BOARD	t	1,242,645	618,548	596,735	1,264,458
TOTAL PACKAGING	t	**4,168,817**	**2,577,930**	**1,236,081**	**5,510,666**
Δ VS. 2010	%	**-2.2**	**0.1**	**-2.5**	**-1.0**
PAPER FOR GRAPHIC USE	t	3,051,641	2,462,311	1,626,922	3,887,031
PAPER FOR HYGIENIC-SANITARY USE	t	1,502,327	57,775	695,618	864,483
OTHER TYPES OF PAPER	t	407,471	69,079	63,454	413,097
TOTAL OTHER PAPER AND BOARD	t	**4,961,439**	**2,589,165**	**2,385,994**	**5,164,611**
Δ VS. 2010	%	**2.8**	**-4.4**	**3.2**	**-1.1**
TOTAL PAPER PRODUCTION	t	**9,130,256**	**5,167,095**	**3,622,075**	**10,675,277**
Δ VS. 2010	%	**0.5**	**-2.2**	**1.2**	**-1.0**

FIGURE 9

Paper production in Italy. 1999-2011 historical data set.
(Source: Elaborazioni Assocarta su dati ISTAT and stime Assocarta)



PAPER PRODUCTION (kt)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
PACKAGING	4,071	4,347	4,287	4,429	4,440	4,471	4,541	4,661	4,681	4,434	3,877	4,261	**4,169**
OTHER PAPER AND BOARD	4,615	4,784	4,669	4,927	5,051	5,196	5,458	5,347	5,431	5,033	4,527	4,826	**4,961**
TOTAL PAPER PRODUCTION	**8,686**	**9,131**	**8,956**	**9,356**	**9,491**	**9,667**	**9,999**	**10,008**	**10,112**	**9,467**	**8,404**	**9,087**	**9,130**

FIGURE 10

Consumption, import, export of recovered paper and apparent collection*. 1995-2011 period.
(Source: Assocarta data processed by Comieco)

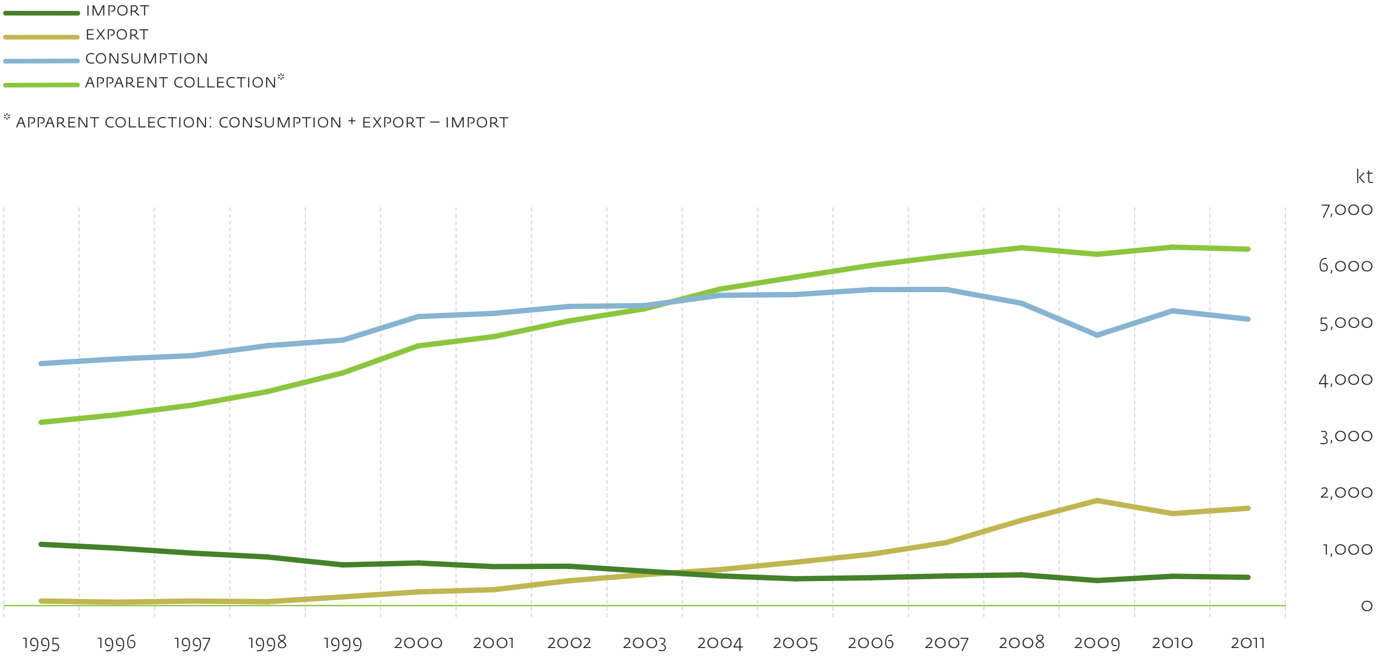


FIGURE 11

Raw materials of the paper industry in 2011.
(Source: Assocarta and Comieco)

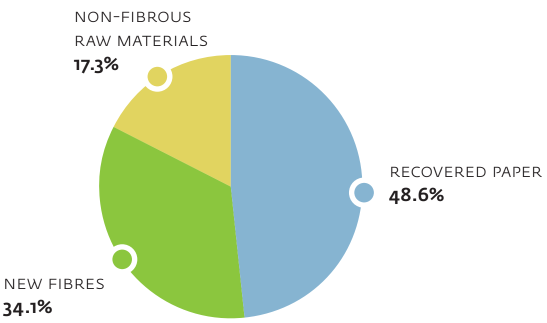
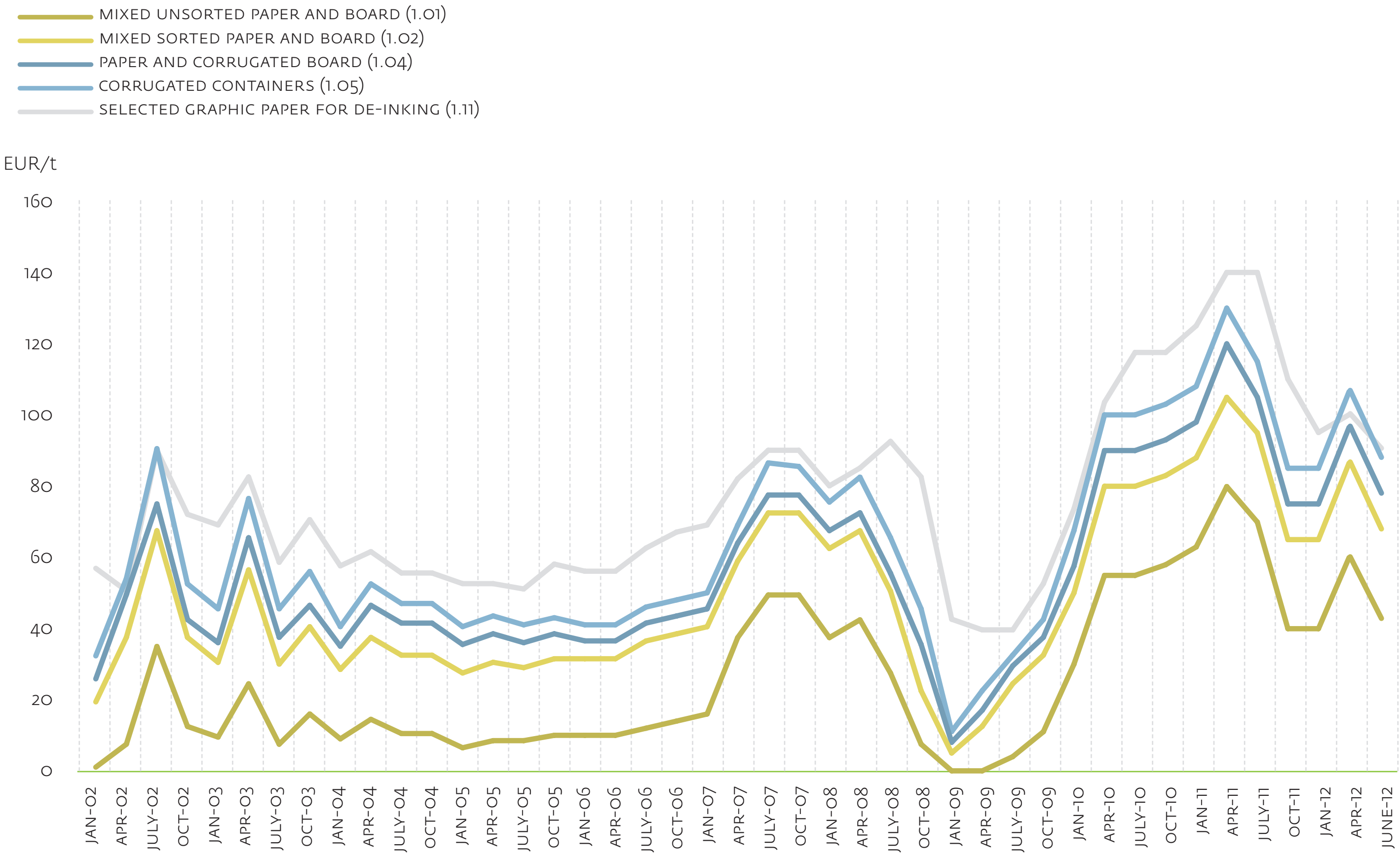


FIGURE 12

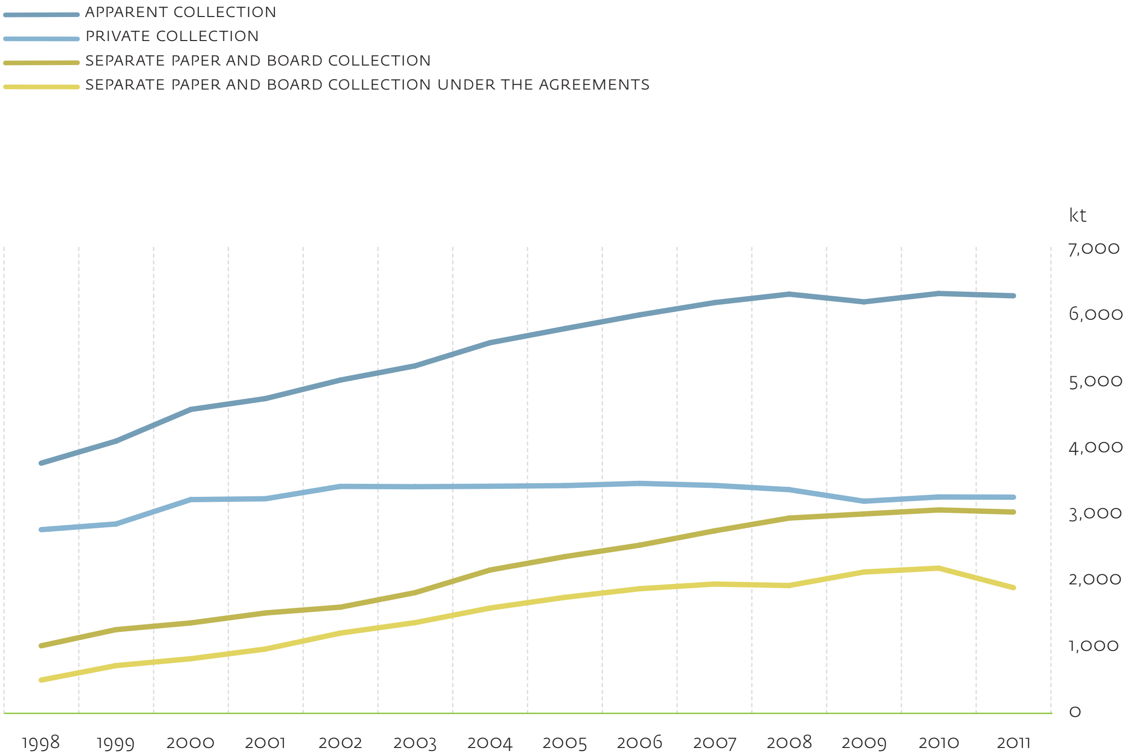
Monthly observations of mean recovered paper values* (EUR/t). January 2002-June 2011 period.
(Source: Milan Chamber of Commerce)



* for sorted materials, packed in bales without foreign substances, from recoverer to user ex departure facility, VAT and transport excluded, except recovered paper relevant to types referred to the materials recovered through separate urban and similar waste collection.

FIGURE 13

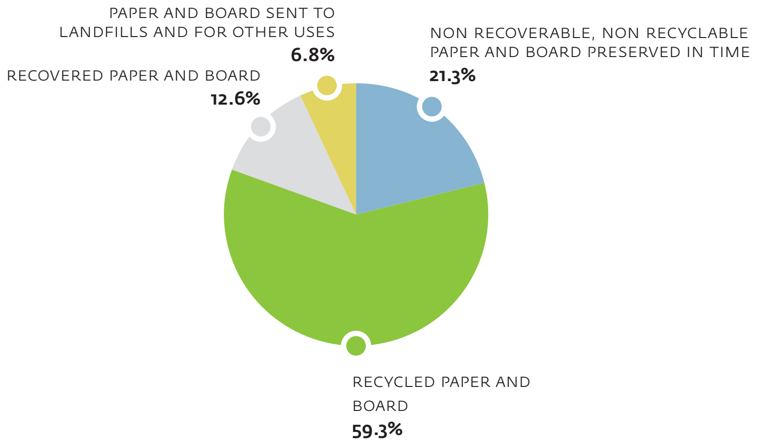
Overall and municipal paper and board collection in Italy. 1998-2011 historical data set.
(Source: Comieco)



		1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Δ kt '98/2011	Δ % '98/2011
APPARENT COLLECTION	kt	3,749	4,084	4,565	4,730	5,011	5,227	5,578	5,792	6,001	6,187	6,316	6,199	6,326	6,291	2,541	67.8
MUNICIPAL PAPER AND BOARD SC	kt	1,001	1,247	1,349	1,501	1,589	1,810	2,154	2,358	2,532	2,750	2,945	3,008	3,069	3,037	2,036	203.4
MUNICIPAL PAPER AND BOARD SC UNDER THE AGREEMENTS	kt	485	706	811	959	1,202	1,362	1,584	1,747	1,879	1,950	1,928	2,134	2,193	1,895	1,410	290.7
PRIVATE COLLECTION	kt	2,748	2,837	3,216	3,229	3,422	3,417	3,424	3,434	3,469	3,437	3,371	3,191	3,257	3,254	506	18.4
MUNICIPAL PAPER AND BOARD SC UNDER THE AGREEMENTS VS. APPARENT COLLECTION	%	**12,9**	**17,3**	**17,8**	**20,3**	**24,0**	**26,1**	**28,4**	**30,2**	**31,3**	**31,5**	**30,5**	**34,4**	**34,7**	**30,1**		

FIGURE 14

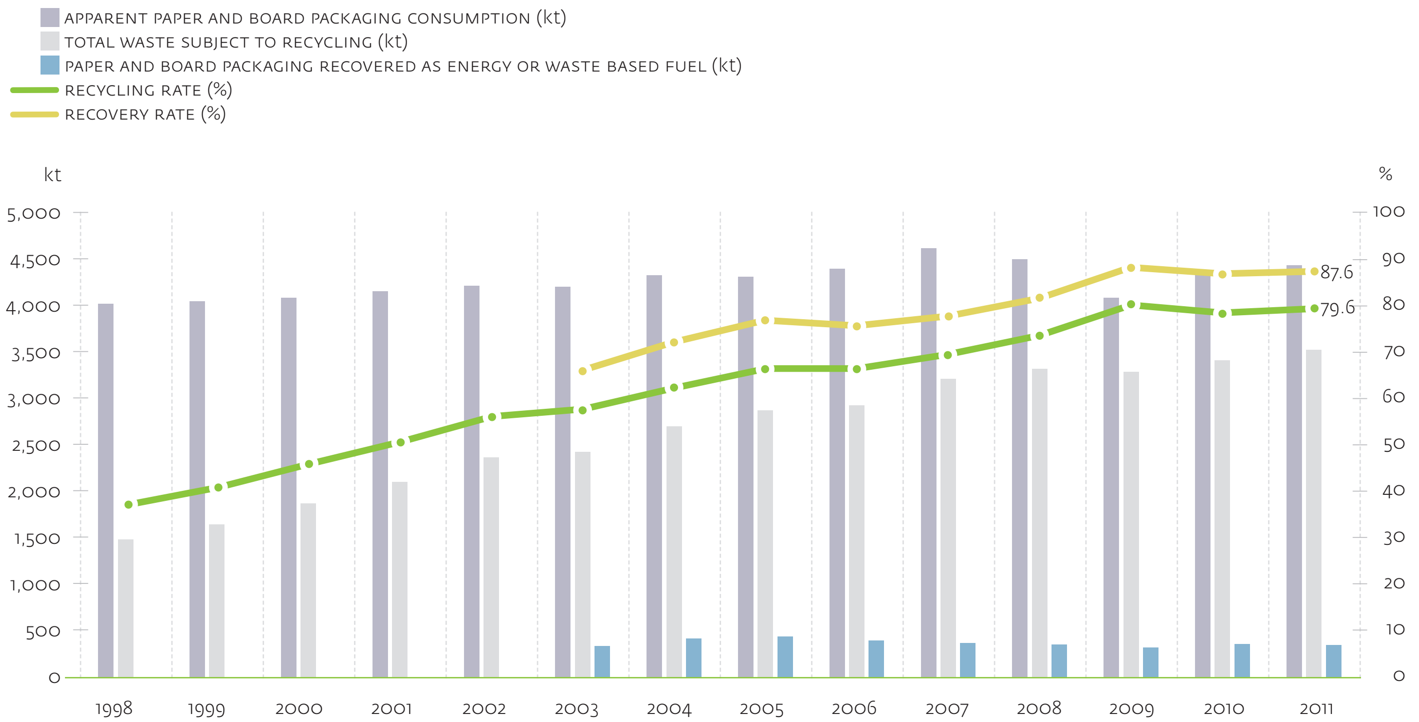
Destination of paper and board consumed in Italy in 2011.
(Source: Assocarta data processed by Comieco)



	kt
NON RECOVERABLE, NON RECYCLABLE PAPER AND BOARD PRESERVED IN TIME	1,780
RECYCLED PAPER AND BOARD	4,945
RECOVERED PAPER AND BOARD	1,050
PAPER AND BOARD SENT TO LANDFILLS AND FOR OTHER USES	571
TOTAL CONSUMPTION OF PAPER AND BOARD PRODUCTS	**8,346**

FIGURE 15

Paper and board packaging recovery and recycling targets. 1998-2011 period (kt and %).
(Source: Comieco)



Note: energy recovery before 2003 only monitored for the share managed under the agreements. Total data not available.

TABLE 9

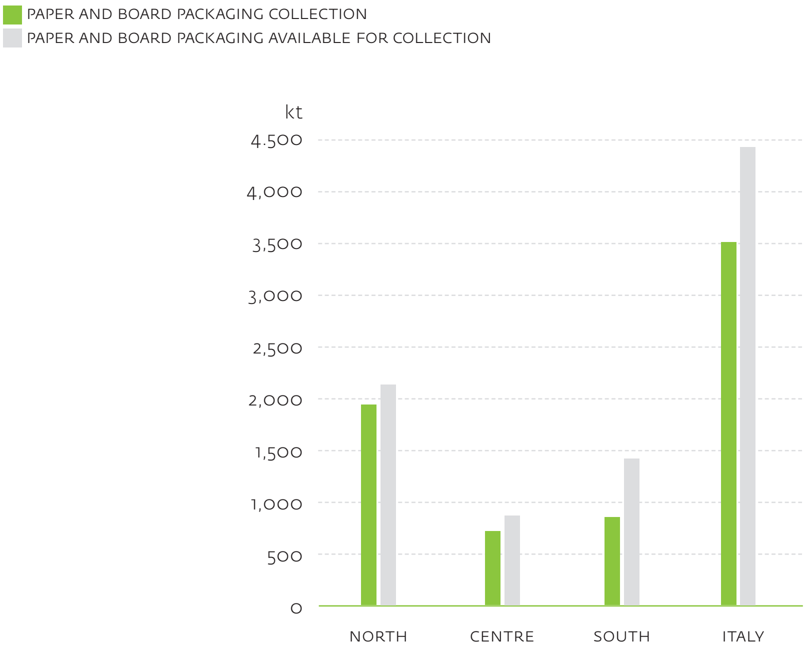
Paper and board packaging recovery and recycling targets achieved in 2011.
(Source: Comieco)

CALCULATION OF RECYCLING AND RECOVERY RATES	YEAR 2011	Δ 2010/2011
APPARENT CONSUMPTION OF PAPER AND BOARD PACKAGING	4,436,203	2.25%
PAPER AND BOARD PACKAGING FROM 1.01+1.02 (PAPER AND PACKAGING) RECYCLED IN ITALY	336,914	-3.96%
PAPER AND BOARD PACKAGING FROM 1.04+1.05 (PACKAGING ONLY) RECYCLED IN ITALY	2,257,289	0.13%
RECOVERED PAPER ORIGINATING FROM PACKAGING RECYCLED ABROAD	936,449	15.44%
TOTAL RECYCLED PAPER AND BOARD PACKAGING	**3,530,652**	**3.35%**
PAPER AND BOARD PACKAGING RECOVERED AS ENERGY OR WASTE-BASED FUEL	**355,000**	**-1.78%**
TOTAL RECOVERED PAPER AND BOARD PACKAGING	**3,885,652**	**2.86%**

RECYCLING	**79.6%**
ENERGY RECOVERY	**8.0%**
RECOVERY	**87.6%**

FIGURE 16

Paper and board packaging collection indexes achieved in 2011 by macro-areas.
(Source: Comieco)



		NORTH	CENTRE	SOUTH	ITALY
PAPER AND BOARD PACKAGING COLLECTION	kt	1,947	719	856	**3,522**
COLLECTION INDEX	%	91.1	82.2	60.1	**79.4**

Note: The "collection index" estimates the collection level in public and private areas, with reference to the apparent consumption of paper and board packaging available for collection.

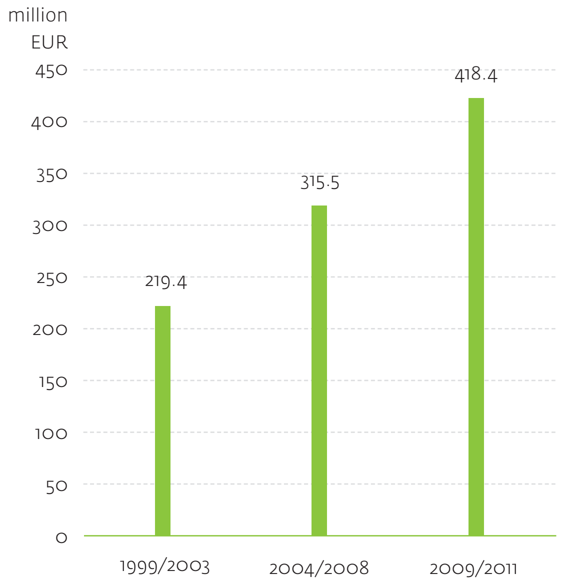
TABLE 10

Balance of benefits from paper and board collection and recycling in Italy. 1999-2011 period.
(Source: Althesys data processed by Comieco)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	TOTALE
							million EUR							
COST ITEMS														
SC DIFFERENTIAL	-35.9	-40.4	-56.3	-62.1	-73.5	-72.3	-74.1	-74.8	-78.7	-79.6	-82.6	-81.1	-106.3	-917.7
NON-GENERATED ENERGY	-7.3	-6.6	-8.4	-9.4	-12.7	-14.5	-19.6	-23.0	-23.7	-30.5	-22.1	-20.9	-23.3	-222.0
TOTAL COSTS	**-43.2**	**-47.0**	**-64.7**	**-71.5**	**-86.2**	**-86.8**	**-93.6**	**-97.8**	**-102.4**	**-110.0**	**-104.7**	**-102.0**	**-129.6**	**-1,139.7**
BENEFIT ITEMS														
AVOIDED EMISSIONS	50.9	54.2	63.9	67.3	75.7	63.5	50.4	72.9	75.7	89.0	52.8	55.8	73.6	845.7
NON-DISPOSAL	106.1	115.0	139.1	149.3	171.2	189.7	204.5	220.6	234.6	257.3	266.5	266.4	266.3	2,586.6
GENERATED RAW MATERIALS	68.7	69.2	4.9	29.8	28.6	27.1	25.7	32.2	109.7	79.3	16.2	157.6	184.2	833.2
GENERATED EMPLOYMENT	34.9	37.7	43.5	48.1	51.5	50.6	63.2	68.6	72.3	81.5	83.3	84.7	84.0	803.9
TOTAL BENEFITS	**260.6**	**276.1**	**251.4**	**294.5**	**327.9**	**330.9**	**343.8**	**394.2**	**492.3**	**507.1**	**418.8**	**564.6**	**608.1**	**5,069.4**
NET BALANCE	**217.4**	**229.1**	**186.7**	**223.0**	**240.8**	**244.1**	**250.2**	**296.3**	**389.8**	**397.0**	**314.1**	**462.5**	**478.5**	**3,929.7**

FIGURE 17

Mean annual benefit of separate paper and board collection and recycling based on the ANCI-CONAI Agreements.
(Source: Althesys data processed by Comieco)



NOTE ON THE METHOD

A few notes are provided to explain the data contained in this report with particular reference to the past edition:

1. the number of inhabitants in Italy was updated from 58.8 to 60.0 million (+2%). In order to allow a homogeneous comparison against the previous years, the data for which the population is relevant (per capita) was recalculated for the 2008-2011 period;
2. the figure for collection in Puglia was updated with reference to the year 2010, and the totals for the South and for Italy were adjusted accordingly.

For a few years now, the definition of the separate paper and board collection share not managed by the Consortium has been based on the input of the Institutions and Organizations that monitor or manage local waste flows (ISPRA, Regions, Local Agencies, Provinces, Work Groups, Cities, operators, plants, etc.). The goal is to obtain local data, as detailed as possible, for comparison against information resulting from management by the Consortium. When no official data is available, Comieco estimates collection at provincial level.
With reference to this report – 2011 evaluations – 77.6% of the collected data originates from official sources, and partly overlaps with the data already available to Comieco; 19% refers to amounts managed directly by the Consortium or supplied by the parties to the agreements in accordance with the Technical Annex (with no other official sources), and 3.4% is based on amounts estimated as described below.

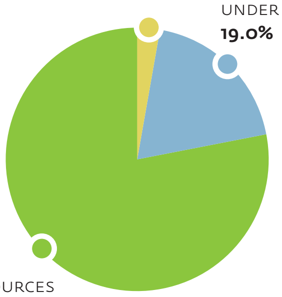
In order to estimate the amounts not managed by Comieco, and not available from the above-mentioned official sources, 3 groups of provinces were considered:

- **group A**, i.e. the provinces where Comieco covers more than 85% of the inhabitants through the agreements;
- **group B**, i.e. the provinces where Comieco covers 51 to 85% of the inhabitants through the agreements;
- **group C**, i.e. the provinces where Comieco covers 20 to 50% of the inhabitants through the agreements.

A direct survey was then carried out on the Cities and service providers, aimed at understanding how many of the Cities not involved in the agreements have introduced the separate paper and board collection service.
If the surveyed City provided information on the introduction, if any, of the collection service, as well as data on collection, such data was included among the official sources.
On the other hand, if no data on the amounts was available, attempts were made to identify the rate of inhabitants not subject to the agreements, but performing separate paper and board collection: for these, the same per-capita value recorded for the inhabitants under the agreements in that province was assumed.
Based on the above, the collection data was calculated and added to the data referring to the share managed by Comieco, so as to estimate total collection in the region under consideration.

FIGURE 18

Sources and method.
(Source: Comieco)



GROUP	% INHABITANTS UNDER THE AGREEMENTS	% OF INHABITANTS NOT SUBJECT TO THE AGREEMENTS ON WHOM SC PERFORMANCE SHOULD BE CHECKED
A	AB > 85%	ALMENO IL 25 %
B	51% < AB < 85%	ALMENO IL 50 %
C	20% < AB < 50%	ALMENO IL 75 %

Note
Certain values (quantitative, in particular) taken from last year's report were updated to ensure a homogeneous comparison for the past two years.

PAGING AND GRAPHIC LAYOUT

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